Author’s response to reviews

Title: Estimating levels of HIV testing coverage and use in Prevention of Mother-to-Child Transmission among Women of Reproductive age in Zambia

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Comments from BMC and Responses

Comment: Key words as closer as possible to Mesh/ PUBMED words.

Response: Most of the words were changed according to Mesh/PUBMED wording. We now use the following key words: Prevention of mother to child transmission (PMTCT), child bearing women, HIV, Zambia,

Comment: Is this Prevention or Elimination

Response: This paper is about PMTCT coverage. Elimination of mother to child transmission of HIV is the overall goal, but we are not evaluating the impact of PMTCT program in Zambia, only coverage.

Comment: Although, pertinent background results too long. Please, summarize and consider whether some of the quotes could go to the discussion section when discussing the results.

Response: The background information has been shortened. We have moved some of the quotes to the discussion and other parts removed.
Comment: Please, redraft according to STROBE guidance

I do miss:

1) Design

2) Better description of the sample; a figure might be of use

3) Main endpoint operational definition

4) Predictors: operational definition

5) Potential limitations

Response: Methods section has been readjusted accordingly, specifically we have ensured that:

- Cross-sectional study design has clearly been indicated;
- Sampling figure and description of sample is given;
- Main outcome and predictors have been defined;
- Potential limitations put in its right location

Comment: Please, further explanation is needed on Survey weights?

Response: The analysis was using clustered data from the Zambian DHS. We had not made this clear in the paper. In the analysis we did use:

- Survey weights incorporating the individual sample weights for women in the database,
- Primary sampling unit (PSU) and sample strata

Sampling errors were obtained using the sample weights, the stratification, and the assessment of cluster variability. We have now included these information in the methods to ensure that it is clear to the reader.

Comment: data come from a random-clustered sampling, however you end up using a plain logistic regression. Should not be more appropriate using hierarchical logistic analyses so you can grasp the effect of the clusters. Please discuss why you have not used this methodology. If there is not a strong argument, it is better using a hierarchical model with a random overall effect capturing latent cluster effects.
Response: Thank you for this comment. We did not make this clear, although a weighted multiple logistic regression model was used. We have now reanalysed the data, and made sure we explain the correct methods in the paper.

Comment: These figures come from sample, provide confidence intervals please.

Response: Confidence intervals have been provided for both table 1 and 2.

Comment: A bit confusing to me as the number of women tested for HIV does not match in table 2, Please clarify.

Response: This has been adjusted. The confusion is mainly on the denominators. Overall total number of women tested for HIV in ZDHS were 12,413 out of de-facto sample of 15,388. Women who reported ever attended ANC were 6,511. Out of the total Women who reported ever attended ANC (6511) 6,132 reported ever tested for HIV during ANC (6,132/6,511).

Comment: what is the goodness of fit. On the other hand, you have not explored interaction terms - some variables might have multiplicative effects you should assess, even multi-collinearity. For example ANC provides PMTCT services, ANC provides testing. Please, evaluate both multi-collinearity and interaction terms, provide new results and add exploration in an appendix.

Response: Thank you for this comment. We did not use a “goodness of fit” test for these associations and we have removed this from the paper. We agree with the comment that there may be interactions between the variables include in the model, and we have now looked at some specific interactions, and included these in the analysis. Specifically, we assessed interactions between wealth index and place of delivery; age and wealth index as well as place of delivery and whether ANC included HIV test or not. Both of these interactions showed no significant differences in the logodds of testing for HIV for the interaction terms, so we have not reported the effects in the table, but we have reported there were no significant interaction terms in the text of the Results.

We have also assessed multi-collinearity and correlation between some of the variables. Specifically we have looked at collinearity between whether ANC included HIV test or not and ANC covered PMTCT.
Comment: Recommendations should be placed at the discussion section after limitations.
Response: This has been adjusted

Comment: place at the end of the methods section with all the ethical considerations
Response: Ethics considerations have been placed at the end of the methods section

Comment: place Availability of data at the methods section, after describing the survey. Be concise please.
Response: Availability of data has been placed after describing the survey in the methods section